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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,220	09/29/2003	Jessy Rouyer	139165USNP	2505

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EXAMINER	
CHRISS, ANDREW W	
ART UNIT	**PAPER NUMBER**
2472	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,220	ROUYER ET AL.	
	Examiner	Art Unit	
	ANDREW CHRISS	2472	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment, filed November 29, 2010, has been entered and carefully considered. Claim 8 is amended, Claim 21 is canceled, and Claims 1-20 are currently pending.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. **Claims 1 and 8-11** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe (United States Patent 7,061,876) in view of Rigby et al (United States Patent Application Publication US 2003/0223358 A1), hereinafter Rigby, and Shabtay et al (United States Patent 7,197,008), hereinafter Shabtay.

Regarding Claim 1, Ambe discloses a bridged network system, as shown in Figure 1A. The bridged network comprises a plurality of nodes (switches B1-B5), wherein each node is coupled to communicate with at least one other node in the plurality of nodes, and wherein the plurality of nodes comprise a bridge network between external nodes (terminals A11 through A53) located externally from the plurality of nodes. Further, each node is operable to receive a frame (packet) as shown in Figure 11, wherein the packet comprises a destination MAC address list, as shown in Figure 9B. Further, Ambe discloses that responsive to a packet being received prior to a time of failure between two of the plurality of nodes, the node transmits the packet along a first route in the system, as shown in step S14 in Figure 11 (i.e., under normal network conditions prior to a time of failure). However, Ambe does not disclose transmitting the packet

along a second route that differs from a first route in the system after a time of failure in response to a route identifier and a node detecting a link failure. In the same field of endeavor, Rigby discloses a system in which nodes may detect failure via physical-based discovery techniques and determine a down path identifier (paragraph 0031). When a node receives a packet, it performs a lookup to identify a primary and secondary forwarding element (i.e., first and second paths for the packet), as well as a primary path identifier (Figure 6; paragraph 0037). If the primary path identifier is found to match the stored down path identifier (paragraph 0037), the secondary forwarding information is used to forward the packet to a second route different than a first route (e.g., secondary route 50 in Figure 4 instead of primary route 40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the path identifiers taught in Rigby with the bridged network system disclosed in Ambe in order to provide a protection switching mechanism to support traditional telecommunications traffic in packet-based networks. However, the aforementioned references do not disclose a route indicator field further comprising at least one bit that indicates a link type or sending a packet along a second route in response to the change of state of the at least one bit that indicates the link type. In the same field of endeavor, Shabtay discloses a local protection bit which is read from received packets at intermediate nodes in the network (column 13, lines 3-7). If the local protection bit is set (i.e., the bit is changed in state), the packet is sent over a protection tunnel (i.e., second route) (column 13, lines 11-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the protection switching disclosed in Shabtay with the bridged network system disclosed in Ambe, as modified above, in order to

inform edge nodes on the ends of a path that local protection was deployed along the path (see column 3, lines 24-28 of Shabtay).

Regarding Claim 8, Ambe further discloses identifying a transmit port in the node that corresponds to a receipt port in the node, as shown in Figure 7. Further, Ambe discloses transmitting a frame (i.e., data packet) via the ports (column 4, lines 41-45 and column 6, lines 5-14). However, Ambe does not disclose transmitting the packet along a second route. In the same field of endeavor, Rigby discloses transmitting a packet along a second route (paragraph 0039). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the path identifiers taught in Rigby with the bridged network system disclosed in Ambe in order to provide a protection switching mechanism to support traditional telecommunications traffic in packet-based networks.

Regarding Claim 9, Ambe further discloses an optimum spanning tree selection table, which does not contain a destination address (Figure 7). The optimum spanning tree is determined based on a hop count or by a path cost (column 2, lines 43-45). Therefore, the transmitting step is not responsive to a destination address in the packet.

Regarding Claim 10, Ambe discloses multiple nodes being operable to receive and transmit packets along any one of multiple routes, based on information contained in a spanning tree, until the packet reaches terminal A11 via switch B1, which serves as an egress node in the bridged network.

Regarding Claim 11, Ambe further discloses identifying a transmit port in the node that corresponds to a receipt port in the node, as shown in Figure 7. Further, Ambe discloses transmitting a frame (packet) via the ports (column 4, lines 41-45). However, Ambe does not

disclose transmitting the packet along a second route. In the same field of endeavor, Rigby discloses transmitting a packet along a second route (paragraph 0039). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the path identifiers taught in Rigby with the bridged network system disclosed in Ambe in order to provide a protection switching mechanism to support traditional telecommunications traffic in packet-based networks.

4. **Claims 2-5 and 7** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe in view of Rigby and Shabtay, as applied to claim 1 above, and further in view of Perlman et al (United States Patent 5,796,740), hereinafter Perlman.

Regarding Claim 2, Ambe, Rigby, and Shabtay disclose all of the limitations of Claim 1, as discussed above. However, the references do not disclose determining a third route in the system after the time of failure, receiving a second packet after the first packet, transmitting the second packet along the third route. In the same field of endeavor, Perlman discloses determining a third link and receiving a subsequent (second) packet. Further, Perlman discloses forwarding said subsequent packet along a third route (column 18, lines 61-62). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the packet forwarding taught in Perlman with Ambe, as modified above, in order to reduce the time required to forward data packets.

Regarding Claim 3, Ambe, Rigby, and Shabtay do not disclose changing the state of the route indicator field to cause transmission to the third route after receiving the second packet and prior to transmitting the second packet. In the same field of endeavor, Perlman discloses writing a data link address of a receiving end station into a data link destination address field of a first

packet (column 2, lines 52-63) and forwarding said first packet onto said third link (column 18, lines 61-62). Further Perlman discloses writing a data link address into data link destination address field of subsequent packets (which would include a second packet) transmitted to said receiving end station. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the packet forwarding taught in Perlman with Ambe, as modified above, in order to reduce the time required to forward data packets.

Regarding Claim 4, Ambe discloses the terminal A31 transmits an ARP response frame whose destination MAC address for terminal A11, which is external to the plurality of nodes. (Column 6, lines 21-27). The switch B3, in order to transmit the frame, consults an expanded learning table (Figure 6), which identifies a transmit port in the node that corresponds to a destination address (MAC address) in the packet. After consulting the expanded learning tree, the switch transmits the ARP response frame along a first route, using a default spanning tree, via a transmit port (column 6, lines 53-56).

Regarding Claim 5, Ambe further discloses identifying a transmit port in the node that corresponds to a destination address in the packet, as discussed with regards to Claim 4 above. However, Ambe, Rigby, and Shabtay do not disclose transmitting the packet via the transmit port to the third route. In the same field of endeavor, Perlman discloses forwarding a packet along a third route, as discussed with regards to Claim 2 above. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the packet forwarding taught in Perlman with Ambe, as modified above, in order to reduce the time required to forward data packets.

Regarding Claim 7, Ambe further discloses setting the route indicator field and transmitting it along the first route. However, the references do not disclose performing these operations after receiving a second packet. In the same field of endeavor, Perlman discloses receiving a second packet, as discussed with regards to Claim 2 above. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the packet forwarding taught in Perlman with Ambe, as modified above, in order to reduce the time required to forward data packets.

5. **Claim 6** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe in view of Rigby, Shabtay, and Perlman as applied to claim 2 above, and further in view of Petersen et al (United States Patent 6,154,448), hereinafter Petersen. The combination of Ambe, Rigby, Shabtay, and Perlman disclose all of the limitations of Claim 2, as described above. However, the references do not disclose a node, adjacent to a failure in the first route, receiving the second packet. In the same field of endeavor, Petersen discloses a method for detecting a failure in a telecommunications network, wherein a second packet is received by a node adjacent to a failed link (column 11, lines 22-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the next hop loopback technique taught in Petersen with Ambe, as modified above, in order to implement the path restoration technique on an "as needed" basis rather than a periodic basis, thus conserving network resources.

6. **Claim 12-14, 16, and 17** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe in view of Rigby and Shabtay, as applied to Claims 1 above, and further in view of Navar et al (United States Patent 6,915,445), hereinafter Navar. Ambe, Rigby, and Shabtay disclose all of the limitations of Claim 1, as described above. Further, Ambe discloses a first node (B3) in

the plurality of nodes that receives a packet from a first external node (A31), thus comprising an ingress node. Ambe also discloses a second node (B1) in the plurality of nodes that is coupled to communicate the packet to a second external node (A11), thus comprising an egress node. However, the references do not disclose, responsive to a node in the plurality of nodes receiving a packet as an ingress node, inserting an address of the ingress node and the egress node into the packet. In the same field of endeavor, Navar discloses a label switched router (LSR) 105 which acts as an ingress to a network. The LSR then switches the existing labels on the packets with new values representing ingress and egress addresses (column 6, lines 39-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the disclosure of Navar with Ambe, as modified above, in order to provide distributed processing, thus ensuring the routing will still be able to occur in spite of component failures.

Regarding Claim 13, Ambe further discloses transmitting the packet along either the first route or the second route by identifying a transmit port in the node (Figure 6) and transmitting the packet via the transmit port to either the first or second route (Figure 8), as described with regards to Claim 5 above.

Regarding Claim 14, Ambe further discloses transmitting the packet along either the first or second route responsive to a value of an optimum spanning tree, equivalent to Applicant's route indicator field (Figure 8).

Regarding Claim 16, Ambe further discloses a first route and a second route comprising routes in a plurality of different routes, wherein each route is identified prior to a time of failure using an optimum spanning tree (Figure 7), equivalent to Applicant's route indicator field.

Regarding Claim 17, Ambe further discloses each route in the plurality of different routes being identified by a corresponding and different value in the optimum spanning tree (Figure 7), equivalent to Applicant's route indicator field.

7. **Claim 15** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe in view of Rigby, Shabtay, and Navar, as applied to claim 14 above, and further in view of Habetha (United States Patent United States Patent 7,031,321). The combination of Ambe, Rigby, Shabtay, and Navar disclose all of the limitations of Claim 14, as described above. However, the references do not disclose the packet comprising a field indicating the allowability of an ingress node or a node adjacent a failure to change a state in the route indicator field. In the same field of endeavor, Habetha discloses an UPDATE TRIGGER message, which contains information on changes in the network topology (column 7, lines 41-51). This message would cause a node that receives it (e.g., an ingress node to a network, a node adjacent to a failure) to change its routing tables, and packets that come through. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the dynamic routing method taught in Habetha with Ambe, as modified above, in order to reduce the quantity of data to be transmitted when updating local routing tables.

8. **Claims 18 and 19** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe in view of Rigby, Shabtay, and Navar as applied to claim 16 above, and further in view of Nozaki et al (United States Patent 6,950,431), hereinafter Nozaki.

Regarding Claim 18, the combination of Ambe, Rigby, Shabtay, and Navar disclose all of the limitations of Claim 16, as described above. However, the references do not disclose the packet comprising a VLAN identifier field. In the same field of endeavor, Nozaki discloses a

packet structure containing a VLAN-ID, as shown in Figure 3. It would have been obvious to one of ordinary skill in the art at the time of the invention the disclosure of Nozaki with Ambe, as modified above, in order to provide an information relay technique capable of providing a multicast service without increasing the amount of control traffic in the network.

Regarding Claim 19, the combination of Ambe, Rigby, Shabtay, and Navar does not disclose the VLAN identifier field facilitating registration of selected different routes in the plurality of routes. In the same field of endeavor, Nozaki discloses a VLAN table in Figure 2 which uses the VLAN-ID to register multiple routes. It would have been obvious to one of ordinary skill in the art at the time of the invention the disclosure of Nozaki with Ambe, as modified above, in order to provide an information relay technique capable of providing a multicast service without increasing the amount of control traffic in the network.

9. **Claim 20** rejected under 35 U.S.C. 103(a) as being unpatentable over Ambe in view of Rigby, Shabtay, and Navar as applied to claim 16 above, and further in view of Perlman. The combination of Ambe, Rigby, Shabtay, and Navar discloses all of the limitations of Claim 16, as discussed above. However, the references do not disclose determining a third route in the system after the time of failure, receiving a second packet after the first packet, or transmitting the second packet along the third route. Perlman discloses determining a third route in the system, receiving a second packet, and transmitting the second packet along the third route, as discussed with regards to Claim 2 above. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the packet forwarding taught in Perlman with Ambe, as modified above, in order to reduce the time required to forward data packets in order to reduce the time required to forward data packets.

Response to Arguments

10. Applicant's arguments filed November 29, 2010 regarding rejection of Claims 1 and 8 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Regarding Claim 1, Applicant states "Examiner cited Shabtay as disclosing "responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to a change of state of the at least one bit that indicates the link type in the route indicator field in response to a node detecting a link failure, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route."" Examiner respectfully disagrees and notes that the Shabtay reference is relied upon to teach a route indicator field further comprising at least one bit that indicates a link type and sending a packet along a second route in response to the change of state of the at least one bit that indicates the link type, as indicated in the rejection of Claim 1 under 35 U.S.C. 103(a) above. Applicant further states that "Shabtay involves adding a flag bit to the flag field of the OAM packet rather than changing the state of an existing bit in an actual data packet (i.e. inbound packet) received at a node as required by the claims. In other words, Shabtay's flag bit is not contained within the packet (i.e. data packet or inbound packet) but is added to a separate packet sent as a notification mechanism to indicate that local protection is in place along a certain path." Examiner respectfully disagrees. Examiner notes that the claim language requires "responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to a change of state of the at least one bit that indicates the link type in the route indicator field in response to a node detecting a link

failure, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route and is identified prior to the time of failure" (emphasis added by Examiner). As shown by the cited claim language, there is no requirement for the changing of a state of the at least one bit indicating the link type to be performed by the node receiving and transmitting the packet. Rather the claim language requires the change of state to happen "in response to a node detecting a link failure," but does not require the receiving/transmitting node to be the same as the "node detecting a link failure." Therefore, Examiner submits that the receiving/transmitting node may receive a packet comprising a bit that has already changed state. Shabtay discloses receiving a packet at an "intermediate node," examining the packets received from each link, determining if the packet is to be sent over a protection tunnel, and setting a local protection bit if the packet is to be transmitted over the protection tunnel (Figure 8 and column 13, lines 3-17). As such, Examiner submits that Shabtay discloses a route indicator field further comprising at least one bit that indicates a link type (i.e., setting the link protection bit) and sending a packet along a second route in response to the change of state of the at least one bit that indicates the link type (i.e., indicating to send the packet along a protection route if the local protection bit is set). Regarding Claim 8, Applicant states "dependent claim 8 has been amended to explicitly state that the packet is a data packet in the present invention, as opposed to a OAM packet not containing the original data, to further distinguish from the disclosure of Shabtay." In order to determine the broadest reasonable interpretation of the claimed "data packet," Examiner looks to Applicant's specification at paragraph 0020, which discloses processing of an "Ethernet frame." Examiner further notes that Applicant's specification does not describe the purpose that the frame is to be used for (e.g.,

management, application-layer). Therefore, while Examiner notes Shabtay is not relied upon to disclose the newly claimed "data packets," Shabtay discloses sending the disclosed OAM packet as part of an Ethernet frame (Figure 7). With regards to the rejection of Claim 8, Examiner notes that Ambe discloses the claimed "data packets," as Ambe discloses the routing of ARP request frames (Figure 11; column 4, lines 41-45; column 6, lines 5-14), giving the claim language "data packets" its broadest reasonable interpretation without unnecessarily importing limitations from the specification that do not appear in the claim language. For the reasons stated above, rejection of Claims 1 and 8 under 35 U.S.C. 103(a) is maintained.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW CHRISS whose telephone number is (571)272-1774. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew Chriss/
Examiner, Art Unit 2472
2/1/2011